TITLE

TERMINAL REGISTRATION METHOD USING

SESSION INITIATION PROTOCOL

CLAIM OF PRIORITY

[0001]   This application makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from an application for *TERMINAL REGISTRATION METHOD USING SESSION INITIATION PROTOCOL* earlier filed in the Korean Intellectual Property Office on 2 December 2002 and there duly assigned Serial No. 2002-76049.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002]   The present invention generally relates to a terminal registration method using a session initiation protocol, and more particularly to a terminal registration method using a session initiation protocol for increasing system efficiency and minimizing user mistakes by enabling a terminal to perform registration after receiving an IP (Internet Protocol) address and a telephone number from an Internet access device with the use of an MAC (Media Access Control) address.

Description of the Related Art

[0003]   VoIP (Voice over Internet Protocol) is a communication technology providing a voice telephone service, multimedia conference, and others with the use of Internet protocol, creating

1 various equipments and application services by interworking with IP networks and PSTN (Public

2 Switched Telephone Network).

3 [0004]   As for protocols mainly used for Internet phone implementation, there are H.323 suggested

4 by ITU-T(International Telecommunication Union-Telecommunication), SIP(Session Initiation

5 Protocol) of IETF(Internet Engineering Task Force), and MGCP(Media Gateway Control Protocol).

6 [0005]   Currently, most equipment and service providers are supporting H.323 protocol of the

7 ITU-T, but it is expected that the SIP of the IETF will be popular due to its various functions and

8 expandability.

9 [0006]   Generally, the SIP is an application layer control protocol for establishing, modifying, and

10 terminating calls or multimedia sessions for multimedia communication such as videos and voices,

11 and standards of the SIP are defined in an IETF RFC (request for comments) 2543 document.

12 [0007]   The SIP is a portion of the entire framework suggested by an IETF MMUSIC (Multiparty

13 Multimedia Session Control) working group to implement a multimedia multilateral communication

14 system with SDP (Session Description Protocol: IETF RFC2327), SAP(Session Announcement

15 Protocol: IETF RFC2974), RTSP(Real-Time Stream Protocol: IETF RFC2326), and SCCP(Simple

16 Conference Control Protocol).

17 [0008]   The SIP is an upper protocol of a UDP/TCP/IP (User Datagram Protocol/Transmission

18 Control Protocol/Internet Protocol) layer, supporting both unicast and multicast sessions to start the

19 sessions by inviting client/server protocols which transmitting/receiving SIP request and SIP

20 response messages in request/response methods, to a multimedia conference.

21 [0009]   The SIP request messages in RFC2543 provides 6 basic functions such as INVITE

1 (Invitation for Session Participation), ACK (Confirm for INVITE Request), BYE (Call Terminate),

2 REGISTER (User Agent is registered in a Database of Redirect Server), CANCEL (Cancel a pending

3 request), and OPTIONS (Queries the capabilities of the server). Moreover, SIP response messages

4 are provided as 1xx(Information Response), 2xx(Successful Response), 3xx(Redirection Response),

5 4xx(Client Error, Request Failure), 5xx(Server Failure), and 6xx(Global Failure) for status codes.

6 [0010] A VoIP system based on SIP includes an SIP user agent composed of a UAC (User Agent

7 Client) and a UAS (User Agent Server) and an SIP server composed of SIP proxy servers, a redirect

8 server, a location server, and SIP gateways(SIP/H.323 gateway, SIP/PSTN gateway). In the location

9 server, a server application receiving a REGISTER message is called a registration server or a

10 registrar.

11 [0011] When receiving an SIP REGISTER request, an SIP registration server provides access

12 information to other SIP servers.

13 [0012] When registering in a VoIP network to receive a call with a current IP address and a URL

14 (Uniform Resource Locator), the user agent uses a REGISTER method. An SIP registration method

15 is similar to that of a wireless communication terminal, thus a registration process is unnecessary

16 when the user agent makes a call with the proxy server.

17 [0013] However, the registration process is necessary when the user agent receives a call from the

18 proxy server managing a self domain, even though the user agent does not receive a location

19 information service by IP address and SIP URL.

20 [0014] The above registration process is performed as follows: when the UAC is authenticated

21 by transmitting a REGISTER request message to the proxy server from the UAC, the proxy server

1 retransmits the REGISTER request message to a database of the location server and registers in the

2 location server; the location server transmits a 200 OK response message to the proxy server; and

3 when the proxy server retransmits the 200 OK response message to the UAC, the registration process

4 is terminated.

5 [0015] The authentication process during the registration above will be described in detail as

6 follows: the authentication process begins when the UAC transmits a 201 REGISTER message to

7 the proxy server; at this time, among username, realm, and nonce transmitted when the 201

8 REGISTER message is initially sent, an incorrect nonce value is transmitted on purpose; the proxy

9 server transmits a 401 Error message accordingly; then, the UAC retransmits the 201 REGISTER

10 message, on this occasion, it sends correct values of the username, realm, and nonce; and the proxy

11 server requests registration of the location server when the correct values are received, and

12 terminates the registration.

13 [0016] On the other hand, a user can modify the username used for the registration process by

14 operating keys of a self terminal. Thus, many users may repeatedly use the same username.

15 [0017] When the users repeatedly use the same username, the proxy server may repeatedly register

16 the same value during the registration process. In this case, the proxy server updates the username

17 with a currently registered value, causing a problem that a user who already uses the same username

18 by registration cannot use a self username.

19 [0018] In another words, when using a prior standard SIP, the registration process is performed

20 with user information inputted by users. As a result, if the users directly input or modify various sorts

21 of information and set a repeated value by mistake, users who registered the username in advance

1 may not use self username, thereby deteriorating system efficiency and making management

2 difficult.

3 ## SUMMARY OF THE INVENTION

4 **[0019]** It is therefore an object of the present invention to provide a terminal registration method

5 using a session initiation protocol for enabling a terminal to perform registration by receiving an IP

6 address and a telephone number from an Internet access device with the use of an MAC address, in

7 order to prevent users from setting a repeated value by mistake when the terminal is registered in an

8 SIP server with the session initiation protocol.

9 **[0020]** It is another object to provide the terminal transmitting a telephone number by obtaining

10 the number from a session initiation protocol server, thus avoiding the need to set specific values by

11 users.

12 **[0021]** It is yet another object to change the information of the terminal by changing the database

13 of only the session initiation protocol server.

14 **[0022]** To achieve the above and other objects, in a voice over Internet protocol (VoIP) system

15 including a terminal and an SIP server, the present invention includes the steps of: transmitting an

16 MAC address to the SIP server by the terminal; retrieving a database, and transmitting terminal

17 information of the terminal corresponding to the received MAC address to the terminal by the SIP

18 server receiving the MAC address from the terminal; transmitting a register message including the

19 obtained terminal information and having a field value of a telephone number field as a first

20 predetermined value to the SIP server by the terminal; retrieving the database, and transmitting user

1   registration information in accordance with the terminal information received from the terminal to

2   the terminal by the SIP server receiving the register message including the terminal information and

3   having the field value of the telephone number field as the first predetermined value from the

4   terminal; requesting registration of the SIP server by using the received user registration information

5   by the terminal; and performing registration of the terminal and transmitting a success message to

6   the terminal by the SIP server receiving a registration request signal including the user registration

7   information from the terminal.

BRIEF DESCRIPTION OF THE DRAWINGS

9   [0023]   A more complete appreciation of the invention, and many of the attendant advantages

10   thereof, will be readily apparent as the same becomes better understood by reference to the following

11   detailed description when considered in conjunction with the accompanying drawings in which like

12   reference symbols indicate the same or similar components, wherein:

13   [0024]   Fig. 1 is a VoIP system format diagram using a session initiation protocol (SIP) applied

14   by the present invention;

15   [0025]   Fig. 2 is a VoIP signal flow chart using a session initiation protocol (SIP) applied by the

16   present invention;

17   [0026]   Fig. 3 is a signal flow chart of a terminal registration method using a session initiation

18   protocol in accordance with one embodiment of the present invention;

19   [0027]   Fig. 4a is a diagram illustrating a request message structure used in Fig. 3, and Fig. 4b is

20   a response message structure diagram used in Fig. 3;

[0028]   Fig. 5 is a diagram illustrating a wireless LAN environment in accordance with another embodiment of the present invention;

[0029]   Fig. 6 is a signal flow chart of a terminal registration method using a session initiation protocol under a wireless LAN environment in accordance with another embodiment of the present invention; and

[0030]   FIG. 7 shows an example of a computer including a computer-readable medium having computer-executable instructions for performing a method of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0031]   A preferred embodiment of the present invention will be described herein below with reference to the accompanying drawing.

[0032]   In the following description, well known function or constructions are not described in detail since they would obscure the invention in unnecessary detail.

[0033]   Fig. 1 illustrates a VoIP system format diagram using a session initiation protocol (SIP) applied by the present invention.

[0034]   A VoIP system based on SIP includes an SIP user agent composed of a UAC (User Agent Client) (10) and a UAS (User Agent Server) (70) and an SIP server composed of SIP proxy servers (20, 40, 60), a redirect server (30), a location server (50), and SIP gateways (SIP/H.323 gateway, SIP/PSTN gateway).

[0035]   In the SIP user agent, a client application for generating and transmitting an SIP request

1 message is called the UAC (User Agent Client), and a server application for generating and

2 transmitting a response message, which means for accepting, rejecting, or redirecting a received

3 request by changing a received address, is called the UAS (User Agent Server).

4 **[0036]** An end terminal should implement two functions, and an application operated together

5 with the UAC and the UAS is called a UA(User Agent).

6 **[0037]** In the present invention, SIP clients (10, 70) transmit an MAC address to SIP proxy servers

7 (20, 40) by using a broadcasting method, and receive self IP information, Subnet, and DNS (Domain

8 Name Server) information from the SIP proxy server (40) and an SIP proxy server (60).

9 **[0038]** In addition, the SIP clients (10, 70) set a telephone number to a specific value, for instance,

10 to "0000", transmit a register message including the received IP information and others to the SIP

11 proxy servers (20, 40), and receive self telephone numbers from the SIP proxy servers(40, 60), then

12 request registration by transmitting a register message including the received self telephone numbers

13 to the SIP proxy servers (20, 40).

14 **[0039]** Meanwhile, the SIP server is a server application receiving an SIP request and an SIP

15 response from the UA, including the proxy servers (20, 40), the redirect server (30), and the location

16 server (50) for an SIP service.

17 **[0040]** The proxy servers (20, 40, 60) respond to the SIP request transmitted from the UA or

18 forward the SIP request to a next hop.

19 **[0041]** The proxy server (40) receiving the SIP request transmits the request by obtaining

20 information to determine the next hop from the location server (50). The proxy server can be divided

21 into a stateless proxy server and a stateful proxy server by its operation method.

[0042] The stateless proxy server has a processing method based on contents of a currently received request only without storing information on a request or a response message received in advance, and does not store any information on the SIP request message, thereby not performing message retransmission.

[0043] On the contrary, the stateful proxy server stores information on messages received in advance, and uses the stored information while processing them in the future.

[0044] If the proxy server receiving the SIP request obtains plural transmission paths from the location server, the proxy server can simultaneously transmit a message to many locations. In this case, it is called 'Forking'. The proxy server can be operated as stateless or stateful proxy under certain circumstances. However, it must be operated as stateful proxy during 'Forking' or transmitting with TCP.

[0045] When the MAC address is received from the SIP client (10), the SIP proxy servers (20, 40, 60) transmit the MAC address to the location server (50) and request the IP information, Subnet, and DNS information of the SIP client (10). When the IP information, Subnet, and DNS information are received from the location server (50), the servers transmit the received IP information, Subnet, and DNS information to the SIP client (70).

[0046] Also, when the telephone number is set to "0000" and a register message including the IP information and others is received from the SIP client (10), the SIP proxy servers (20, 40) consider that an initial authentication process is performed. Thus, the servers receive a telephone number of the SIP client (10) from the location server (50) by transmitting terminal information of the SIP client (10) to the location server (50), and transmit the received telephone number to the SIP client

1 (70).

2 [0047] When a register message including a telephone number is received from the SIP client (10),

3 the SIP proxy servers (20, 40) parse the received register message to comparatively analyze the data.

4 If the analyzed data is proper, the servers request registration by transmitting the received register

5 message to the location server (50), and when the registration is successful, the servers receive a

6 success message from the location server (50) and transmit the message to the SIP client (70).

7 [0048] Next, when an INVITE message for inviting the other party to participate in a session is

8 received from the SIP client (10) through the proxy server (20), the redirect server (30) obtains

9 location information on the other party from the location server (50), and transmits location

10 information of a receiver to the UAC (caller) through a '302 Moved temporarily' response without

11 transmitting the message to the next hop.

12 [0049] So, the caller (UAC) can invite the other party for communication to participate in the

13 session by directly sending the INVITE message to the party.

14 [0050] Users who want to communicate together by using an SIP register information on locations

15 where they can currently receive a call in the location server (50) with the use of a REGISTER

16 message.

17 [0051] A server application receiving the REGISTER message is called a registration server or

18 a registrar. Servers without location registration functions can response to the REGISTER message

19 as '501 Not Implemented'.

20 [0052] When the location server (50) is requested to transmit terminal information in accordance

21 with the MAC address from the proxy servers (20, 40), the server transmits IP information, Subnet,

1 and DNS information of a terminal to the proxy servers (40, 60) by retrieving a database. When

2 requested to transmit a telephone number and registration information of the terminal from the proxy

3 servers (20, 40), the location server transmits the telephone number and the registration information

4 of the corresponding terminal to the proxy servers (40, 60) by retrieving the database.

5 [0053] Moreover, when the location server (50) is requested to register the SIP client (10) from

6 the proxy servers (20, 40), the server registers the client and transmits a 200 OK message. If any

7 problem is generated, the server informs of a reason by transmitting a 401 Error Return message.

8 [0054] In the meantime, the SIP gateways are necessary to interwork with networks using different

9 signaling protocols such as PSTN and H.323 network interworking with an SIP network. There are

10 SIP/PSTN gateway and SIP/H.323 gateway.

11 [0055] Fig. 2 is a VoIP signal flow chart using a session initiation protocol (SIP) applied by the

12 present invention, comprising a step of registering a UA (User Agent) SIP URL; a step of setting an

13 SIP call (1~18); a step of transceiving RTP media data (19), and a step of canceling the SIP call

14 (20~25).

15 [0056] First, when a UAC is authenticated by transmitting a REGISTER request message to a

16 proxy server (I), the proxy server (I) performs registration by transmitting the REGISTER request

17 message to a database of a redirect server. The redirect server transmits a 200 OK response message

18 to the proxy server (I) by responding to the REGISTER request message. When the proxy server (I)

19 retransmits the 200 OK response message to the UAC, the registration is terminated.

20 [0057] After the registration process, when the UAC transmits an INVITE request message to the

21 proxy server (I) (1), the proxy server (I) transmits a 100 Trying response message informing of a call

1 attempt to the UAC (2), and the proxy server (I) transmits the INVITE request message to the

2 redirect server (3). When the redirect server transmits a 302 Moved Temporarily response message

3 to the proxy server (I) by responding to the INVITE request message (4), the proxy server (I)

4 transmits an ACK message to the redirect server (5).

5 **[0058]** The proxy server (I) sends an INVITE message to a proxy server (II) (6), and the proxy

6 server (II) transmits the 100 Trying response message to the proxy server (I) by responding to the

7 INVITE message (7).

8 **[0059]** When the proxy server (II) transmits the INVITE request message to a UAS (User Agent

9 Server) (8), the UAS transmits a 100 Trying response message informing of a call procedure to the

10 proxy server (II) (9).

11 **[0060]** The UAS receiving the INVITE request message for call setup transmits a 180 Ringing

12 response message from the UAS to the proxy server (II), from the proxy server (II) to the proxy

13 server (I), and from the proxy server (I) to the UAC path in a hop-by-hop way, respectively (10, 11,

14 12). The UAS transmits a 200 OK response message from the UAS to the proxy server (II), from the

15 proxy server (II) to the proxy server (I), and from the proxy server (I) to the UAC in a hop-by-hop

16 way, respectively (13, 14, 15).

17 **[0061]** At this moment, when the UAC receiving the 200 OK response message transmits an ACK

18 request message from the UAC to the proxy server (I), from the proxy server (I) to the proxy server

19 (II), and from the proxy server (II) to the UAS in a hop-by-hop way, respectively, the call setup is

20 terminated (16, 17, 18).

21 **[0062]** When the call setup is terminated, an RTP media packet transceives a VoIP voice and

1 packet data between the UAC and the UAS through UDP/IP or TCP/IP (19).

2 [0063] After terminating the RTP data transceiving, when the UAS or the UAC transmits a BYE

3 request message from the proxy server (II) to the proxy server (I), and from the proxy server (I) to

4 UAC path in a hop-by-hop way (20 ,21, 22), a 200 OK response message is transmitted from the

5 proxy server (I) to the proxy server (II), and from the proxy server (II) to the UAS path in a

6 hop-by-hop way by responding to the BYE request message, then the call setup is cancelled (23, 24,

7 25).

8 [0064] Fig. 3 is a signal flow chart illustrating a terminal registration method using a session

9 initiation protocol in accordance with one embodiment of the present invention, showing the step

10 of registering the UA (User Agent) SIP URL in detail of Fig. 2.

11 [0065] As illustrated in Fig.3, a terminal registration method using the session initiation protocol

12 includes a terminal information obtaining step (30~35), a telephone number obtaining step (36~41),

13 and a registration step (42~47).

14 [0066] The terminal information obtaining step obtains IP information, Subnet, and DNS

15 information of a terminal from an SIP server by using an MAC address, and obtains IP information

16 and a gateway of the SIP server. First, the step begins when the terminal transmits the MAC address

17 to a proxy server (30, 31). With a broadcasting method, the MAC address transmission step is

18 performed.

19 [0067] Then, the proxy server requests a location server to transmit terminal information in

20 accordance with the received MAC address (32), and the location server transmits IP information,

21 Subnet, and DNS information of the terminal to the proxy server by retrieving a database for the

1 terminal information of the terminal in accordance with the MAC address (33).

2 **[0068]** The proxy server transmits the received IP information, Subnet, and DNS information of

3 the terminal to the terminal with the IP information and the gateway of the SIP server (34, 35).

4 **[0069]** Next, the telephone number obtaining step starts when the terminal receiving the terminal

5 information retransmits the received terminal information to the proxy server by using a register

6 method. At this point, a telephone number is set to "0000" (36, 37). Here, "0000" is rarely used

7 among users, and if there are other numbers rarely used by the users, it is possible to use the

8 numbers.

9 **[0070]** The proxy server receiving the telephone number "0000" from the terminal considers that

10 an initial authentication is performed. So, the server transmits the received terminal information to

11 the location server (38), requesting the location server to transmit a telephone number and

12 registration information of the corresponding terminal.

13 **[0071]** The location server requested to transmit the telephone number and the registration

14 information of the terminal transmits the telephone number and the registration information of the

15 corresponding terminal to the proxy server by retrieving a database (39). When the proxy server

16 transmits the received telephone number and the registration information to the terminal, the server

17 transmits them by inputting information obtained within a 401 Error Message (40, 41).

18 **[0072]** The terminal receiving the telephone number and the registration information from the

19 proxy server sets new values, and performs a registration process. At this time, the terminal encodes

20 the received telephone number and the registration information to MD5, and sends the encoded

21 number and the information to the proxy server by using a register method (42, 43).

[0073] The proxy server receiving the register message from the terminal comparatively analyzes the register message. When the message is successful, the proxy server transmits the received register message to the location server, to perform registration in the location server. After the location server performs the registration, it transmits a 200 OK message. When a problem is generated, the proxy server transmits a 401 Error Return message, and informs of a reason for the error message (44~47).

[0074] Fig. 4a is a diagram illustrating a request message structure used in Fig. 3, and Fig. 4b is a diagram illustrating a response message structure used in Fig. 3.

[0075] As illustrated in Fig.4a, a request message is composed of an SN (Sequence Number), an ID (Identification), an MAC address, and other information. The ID is set to show a request, and the MAC address includes MAC addresses of each terminal.

[0076] As illustrated in Fig.4b, a response message is composed of an SN (Sequence Number), an ID (Identification), a reason, and other information. The ID is set to show a response, and the reason includes various reasons of success or failure.

[0077] Fig. 5 is a diagram illustrating a wireless LAN (Local Area Network) environment in accordance with another embodiment of the present invention.

[0078] As illustrated in Fig.5, the wireless LAN environment in accordance with another embodiment of the present invention includes user agents (generally, PDAs (personal digital assistants), or other types of palmtops, or portable computers such as laptops, notebooks, tablet personal computers or other types of portable or personal computers capable of wireless LAN support) (110a~110n) including wireless LAN cards (CF (Compact Flash) types, PCMCIA (Personal Computer Memory Card International Association) types, etc.), APs (Access Points) (120a~120n)

1 of wireless LAN, a SIP proxy server (130), a SIP redirect server (140), and a location server (150)

2 with database DB.

3 [0079] Through narrowband microwave, infrared, and spread spectrum-based technologies, the

4 user agents (110a~110n) communicate with the access points (120a~120n).

5 [0080] Spread spectrum and narrowband wireless LANs use ISM (Industrial, Scientific, Medical)

6 bands, and an infrared LAN uses a frequency band just below visible rays. The ISM bands

7 designated for industrial, scientific, and medical use include 902-928 MHz (megahertz), 2.4-2.484

8 GHz (gigahertz), and 5.725-5.850 GHz frequency bands. When using a spread spectrum method

9 spreading signals, a lot of frequency bands are used, thereby deteriorating efficiency but maintaining

10 stability and reliability. Thus, many commercial products are currently using spread spectrum

11 technologies.

12 [0081] Furthermore, the access points (120a~120n) perform user agent server functions, and can

13 be implemented with redirect and register functions.

14 [0082] Fig. 6 is a signal flow chart of a terminal registration method using a session initiation

15 protocol under a wireless LAN environment in accordance with another embodiment of the present

16 invention.

17 [0083] As illustrated in Fig.6, the terminal registration method using the session initiation protocol

18 includes; a first step of obtaining a terminal information (50~55); a second step of obtaining a

19 telephone number (56~61); and a third step of registrating a terminal (62~67).

20 [0084] The first step of obtaining the terminal information obtains IP information, Subnet, and

21 DNS information of a terminal from an SIP server, and obtains IP information and a gateway of the

SIP server by using an MAC address. The terminal broadcasts the MAC address (50), and plural or one of many access points transmits the MAC address to a proxy server after receiving a request (51).

[0085] Next, the proxy server receiving the MAC address from the access point requests a location server to transmit terminal information in accordance with the received MAC address (52), and the location server transmits the IP information, Subnet, and DNS information of the terminal to the proxy server by retrieving a database for the terminal information of the terminal in accordance with the MAC address (53).

[0086] The proxy server transmits the received IP information, Subnet, and DNS information of the terminal to the access point (54), and the access point transmits the IP information, Subnet, and DNS information of the terminal and IP information and a gateway of the access point to the terminal (55).

[0087] The second step of obtaining the telephone number starts when the terminal receiving the terminal information retransmits the received terminal information to the proxy server through the access point by using a register method, and at this time, a telephone number is set to "0000" (56, 57). Alternatively to "0000", other numbers and/or symbols that are rarely used by the users can also be used.

[0088] The proxy server receiving the "0000" telephone number from the terminal considers that an initial authentication is performed, and requests the location server to transmit a telephone number and registration information of the corresponding terminal by transmitting the received terminal information to the location server (58).

[0089] The location server requested to transmit the telephone number and the registration information of the terminal transmits the telephone number and the registration information of the corresponding terminal to the proxy server by retrieving a database (59). The proxy server transmits the received telephone number and the registration information to the access point, and the access point transmits the telephone number and the registration information of the terminal to the terminal by inputting information obtained within a 401 Error Message (60, 61).

[0090] The terminal receiving the telephone number and the registration information from the proxy server performs a registration process after setting new values. That is, the terminal encodes the received telephone number and the registration information to MD5, and transmits the number and the information to the access point by using a register method. Then, the access point sends the telephone number and the registration information to the proxy server (62, 63).

[0091] The proxy server receiving a register message from the terminal comparatively analyzes the message, and if the message is successful, the proxy server transmits the register message to the location server, to perform registration (64). The location server transmits a 200 OK message after performing the registration, and if any problem is generated, the location server transmits a 401 Error Return message, and informs of a reason for the error message (65~67).

[0092] The present invention can be realized as computer-executable instructions in computer-readable media. The computer-readable media includes all possible kinds of media in which computer-readable data is stored or included or can include any type of data that can be read by a computer or a processing unit. The computer-readable media include for example and not limited to storing media, such as magnetic storing media (e.g., ROMs, floppy disks, hard disk, and

1 the like), optical reading media (*e.g.*, CD-ROMs (compact disc-read-only memory), DVDs (digital

2 versatile discs), re-writable versions of the optical discs, and the like), hybrid magnetic optical disks,

3 organic disks, system memory (read-only memory, random access memory), non-volatile memory

4 such as flash memory or any other volatile or non-volatile memory, other semiconductor media,

5 electronic media, electromagnetic media, infrared, and other communication media such as carrier

6 waves (*e.g.*, transmission via the Internet or another computer). Communication media generally

7 embodies computer-readable instructions, data structures, program modules or other data in a

8 modulated signal such as the carrier waves or other transportable mechanism including any

9 information delivery media. Computer-readable media such as communication media may include

10 wireless media such as radio frequency, infrared microwaves, and wired media such as a wired

11 network. Also, the computer-readable media can store and execute computer-readable codes that

12 are distributed in computers connected via a network. The computer readable medium also includes

13 cooperating or interconnected computer readable media that are in the processing system or are

14 distributed among multiple processing systems that may be local or remote to the processing system.

15 The present invention can include the computer-readable medium having stored thereon a data

16 structure including a plurality of fields containing data representing the techniques of the present

17 invention.

18 **[0093]** An example of a computer, but not limited to this example of the computer, that can read

19 computer readable media that includes computer-executable instructions of the present invention

20 is shown in FIG. 7. The computer 700 includes a processor 702 that controls the computer 700. The

21 processor 702 uses the system memory 704 and a computer readable memory device 706 that

1   includes certain computer readable recording media. A system bus connects the processor 702 to

2   a network interface 708, modem 712 or other interface that accommodates a connection to another

3   computer or network such as the Internet. The system bus may also include an input and output

4   interface 710 that accommodates connection to a variety of other devices.

5   [0094]   It is to be understood that changes and modifications to the embodiments described above

6   will be apparent to those skilled in the art, and are contemplated. It is therefore intended that the

7   foregoing detailed description be regarded as illustrative rather than limiting, and that it be

8   understood that it is the following claims, including all equivalents, that are intended to define the

9   spirit and scope of this invention.

10   [0095]   In conclusion, according to the present invention, a terminal transmits a telephone number

11   by obtaining the number from an SIP server. Thus, there is no need to set specific values by users,

12   thereby giving convenience to the users.

13   [0096]   In addition, according to the present invention, a terminal obtains a telephone number from

14   an SIP server and transmits the number without requesting a user to input the telephone number, thus

15   it can prevent managerial difficulty caused by user mistakes in terms of system management aspects.

16   [0097]   Moreover, according to the present invention, when information of a terminal is changed,

17   it can change the information of the terminal by changing a database only of an SIP server, thereby

18   giving user convenience.

19   [0098]   Also, according to the present invention, it uses both a proprietary message and an SIP

20   message, thereby preventing down phenomenon caused by system load of a terminal or hacking.